Chemistry Lab Report

Exp No: *05*
Exp Name: Standardization of supplied $NaOH$ by using $0.1M H_2C_2O_4.2H_2O$
Equipments: 1. Burette($500mL$) 2. Conical flask($250mL$) 3. Funnel 4. Wash bottle 5. Pipette 6. Burette stand.

Theory: Titration is a common laboratory method of quantitative chemical analysis to determine the concentration of an identified analyte (a substance to be analyzed). A reagent, termed the titrant or titrator, is prepared as a standard solution of known concentration and volume. The titrant reacts with a solution of analyte to determine the analyte's concentration. The volume of titrant that reacted with the analyte is termed the titration volume.

Chemicals: 1. $NaOH$ 2. $H_2C_2O_4.2H_2O$ 3. Distilled water 4. Indicator(Phenophthalein).

Chemical Reaction:

$H_2C_2O_4.2H_2O + 2NaOH \rightarrow Na_2C_2O_4 + 2H_2O$ Now,

$e_1S_1V_1 = e_2S_2V_2 \Rightarrow S_2 = \frac{e_1S_1V_1}{e_2V_2} \ldots \ldots \ldots (1)$

Where, $e_1 = 2, \quad e_2 = 1$

S_1 = concentration of $H_2C_2O_4.2H_2O$

S_2 = concentration of $NaOH$

V_1 = volume of $H_2C_2O_4.2H_2O$

V_2 = volume of $NaOH$

Description:

01. $0.1(M)H_2C_2O_4.2H_2O$ solution preparation: Weight exactly $1.2kg$ pure erystaline oxalic by dibybrate in a $100mL$ volumetric flask. Dissolve it with little amount of distilled water and untill it up to the mark. Actually it is provided by of our lab assistant.

02. Standardization of $NaOH$ solution: At first fil the burette with $NaOh$ solution and record the initial burette reading. Then take $10mL H_2C_2O_4.2H_2O$ in conical flask and mix it up with 1/2 drops of phenophthalein.

03. Determination: Mix $NaOH$ with $H_2C_2O_4.2H_2O$ drop by drop carefully until $H_2C_2O_4.2H_2O$ solution changes it's color. When $H_2C_2O_4.2H_2O$ changes it's color that means it's the end point of our titration. Now mark the reading for $H_2C_2O_4.2H_2O$ from burette for our further calculation.

Data Table:

	Burette $NaOH$ volume			
SN	$H_2C_2O_4.2H_2O_{mL}$	$Initial_{(mL)}$	$Final_{(mL)}$	$Diff_{initial-final}$
01	$10mL$	$0mL$	$10mL$	$10mL$
02	$10mL$	$10mL$	$20.1mL$	$10.1mL$
02	$10mL$	$20.1mL$	$30.2mL$	$10.1mL$

Calculation:

From the table, Mean value of $NaOH = \frac{10+10.1+10.1}{3} = 10.07mL$

From equation (1) we get, $S_2 = \frac{e_1 S_1 V_1}{e_2 V_2} = \frac{2\times10\times0.1}{1\times10.07} = 0.199$ M

Result: The concentration of NaOH is **0.199 M**

Discussion: The concentation of $NaOH$ may not be totally correct for same certain chemical fault.

Precaution:

01. Usually an air bubble is present in the nozzele of the burette. It must be removed before taking the inital readint.

02. There should not be any kind of leakage from the burette during titration.

03. Always add acid to water.

04. Dont't let base level in burrete to reach zero.